EVI-3 Table of Updates

This table presents updates from the EVI-2 solicitation that are expected to be found in the EVI-3 solicitation. Proposers are encouraged to review the existing EVI-2 solicitation and SALMON-2 AO along with this *EVI-3 Table of Updates*.

EVI-2 Page Reference	**Released EVI-2 PEA M Text** **Blue highlighting indicates the specific text from EVI-2 that is being changed for EVI-3.** **Red text refers to the SALMON-2 AO.**	**EVI-3 Planned * Page Reference**	**Planned EVI-3 PEA P Text Updates.** **Green highlighting indicates relatively minor changes from EVI-2 to EVI-3.** **Yellow highlighting indicates more significant changes from EVI-2 to EVI-3.**
p. M-2	This solicitation calls for proposals for complete PI-led science investigations requiring spaceflight instrument development	p. P-1	This solicitation calls for proposals for complete PI-led science investigations requiring spaceflight instrument or CubeSat(s) development
p. M-2	Investigations may target any Earth science question or issue in order to advance the strategic goals outlined in Section 2.1 answer any of the science questions for Earth Science from Appendix 1 of the *2010 Science Plan for NASA's Science Mission Directorate* (hereafter *2010 Science Plan)*	p. P-2	Investigations may target any Earth science question or issue in order to advance the strategic goals outlined in Section 2.1, answer any of the science questions for Earth Science from Section 2.1 of this PEA and the *2014 Science Mission Directorate Science Plan* (hereafter referred to as the *2014 Science Plan*
p. M-2	The first airborne science investigations funded under the Earth Venture element (called EVS-1) are now in operations. The second Earth Venture element (called EVM-1) solicited and selected a cost constrained standalone space mission that is now in development.	p. P-2	Five solicitations/selections have already resulted from the NASA Earth Venture program.
p. M-3	• *EV Suborbital* (i.e., EVS-1, 2, 3, …). These solicitations call for proposals for complete suborbital, PI-led investigations to conduct innovative, integrated, hypothesis or scientific question-driven approaches to pressing Earth system science issues. The next of these is	p. P-3	• *EV Suborbital* (i.e., EVS-1, 2, 3, …). These solicitations call for proposals for complete suborbital, PI-led investigations to conduct innovative, integrated, hypothesis or scientific question-driven approaches to pressing Earth system science issues. The first suborbital science investigations funded under the EV-1 element (or EVS-1 by the new EV naming

	EVS-2, whose solicitation was released in June 2013. Not solicited in this solicitation. • *EV-Mission* (i.e., EVM-1, 2, 3, …). These solicitations call for proposals for complete PI-led spaceflight missions to conduct innovative, integrated, hypothesis or scientific question-driven approaches to pressing Earth system science issues. The EV-2 (or EVM-1 by the new EV naming scheme) solicitation was the first of these, with the selected mission now in development. The next solicitation in this series is anticipated in 2015. Not solicited in this solicitation. • *EV Instrument* (e.g., EVI-1, 2, 3, …). These solicitations call for developing instruments for participation on a NASA-arranged spaceflight mission of opportunity to conduct innovative, integrated, hypothesis or scientific question-driven approaches to pressing Earth system science issues. The NASA funded PI will retain a central role on the instrument or instrument package development, integration and testing, calibration, and science operations. This is the second solicitation in this series, with the selection(s) expected in 2014. Subsequent solicitations in this series are anticipated every 18 months thereafter (or shortly after the selection announcement of the previously solicited EVI). Solicited in this solicitation.		scheme) are now in operations. As a result of the EVS-2 solicitation, investigations were selected November 2014. Not solicited in this SALMON-2 PEA. • *EV-Mission* (i.e., EVM-1, 2, 3, …). These solicitations call for proposals for complete PI-led spaceflight missions to conduct innovative, integrated, hypothesis or scientific question-driven approaches to pressing Earth system science issues. The EV-2 (or EVM-1 by the new EV naming scheme) solicitation was the first of this series, with the selected mission now in development. The second solicitation in this series expected by the middle of 2015. Not solicited in this SALMON-2 PEA. • *EV Instrument* (e.g., EVI-1, 2, 3, …). These solicitations call for developing instruments for participation on a NASA-arranged spaceflight mission of opportunity or for developing CubeSat(s) to fly on a NASA arranged launch vehicle. These investigations must conduct innovative, integrated, hypothesis or scientific question-driven approaches to pressing Earth system science issues. The NASA funded PI will retain a central role on the instrument, instrument package or CubeSat(s) development, integration and testing, calibration, and science operations. The EVI-1 solicitation was the first of this series, with the selected mission now in development. As a result of the EVI-2 call, two investigations were selected for flight. Solicitations in this series are anticipated every 18 months (or shortly after the selection announcement of the previously solicited EVI) and are solicited in this SALMON-2 PEA.
p. M-3	This is the second solicitation in the Earth Venture series soliciting for instruments to be provided for Missions of Opportunity (MOs). The third solicitation in this series is anticipated to be 18	p. P-3	This is the third solicitation in the Earth Venture Instruments series. The fourth solicitation in this series is anticipated to be 18 months after the release of this EVI-3 PEA and not before the selection announcement for EVI-3.

	months after the release of this EVI-2 and not before the selection announcement for EVI-2.		
p. M-4, M-5	One of NASA's strategic goals is to "Advance Earth System Science to meet the challenges of climate and environmental change." Further information on NASA's strategic goals may be found in the most recent version of the *NASA Strategic Plan*, available at http://www.nasa.gov/offices/ocfo/budget/strat_plans.html, and in the *2010 Science Plan for NASA's Science Mission Directorate*, available at http://science.nasa.gov/about-us/science-strategy/. From space, NASA satellites can view the Earth as a planet and enable its study as a complex, dynamic system with diverse components: the oceans, atmosphere, continents, ice sheets, and life itself. The nation's scientific community can thereby observe and track global-scale changes connecting cause to effects, study regional changes in their global context, and observe the role that human civilization plays as a force of change. Through partnerships with agencies that maintain forecast and decision support systems, NASA improves national capabilities to predict climate, weather, and natural hazards; manage resources; and craft environmental policy. NASA's Earth science research aims to acquire deeper scientific understanding of the components of the Earth system, their interactions, and the consequences to life due to changes in the Earth system. These interactions occur on a continuum of spatial and temporal scales ranging from short-term weather to long-term climate and motions of the solid Earth and from local and regional to global changes. They involve multiple, complex, and coupled processes that affect climate, air quality, water resources, biodiversity, and other features that allow	p. P-4, P-5	One of NASA's strategic goals is to "Advance understanding of Earth and develop technologies to improve the quality of life on our home planet." Further information on NASA's strategic goals may be found in NASA Policy Directive (NPD) 1001.0B, *The 2014 NASA Strategic Plan*, available at http://www.nasa.gov/sites/default/files/files/FY2014_NASA_SP_508c.pdf. The NASA Science Mission Directorate (SMD) is addressing this strategic goal by pursuing the Earth Science Goals. Our planet is changing on all spatial and temporal scales and studying the Earth as a complex system is essential to understanding the causes and consequences of climate change and other global environmental concerns. The purpose of NASA's Earth science program is to advance our scientific understanding of Earth as a system and its response to natural and human-induced changes and to improve our ability to predict climate, weather, and natural hazards. NASA's ability to observe global change on regional scales and conduct research on the causes and consequences of change position it to address the Agency strategic objective for Earth science, which is to advance knowledge of Earth as a system to meet the challenges of environmental change, and to improve life on our planet. NASA addresses the issues and opportunities of climate change and environmental sensitivity by answering the following key science questions through our Earth science program: • How is the global Earth system changing? • What causes these changes in the Earth system? • How will the Earth system change in the future? • How can Earth system science provide societal benefit? These science questions translate into seven overarching science goals to guide the Earth Science Division's selection of investigations and other programmatic decisions:

	our Earth to sustain life and civilization. A challenge is to predict changes that will occur in the next decade to century, both naturally and in response to human activities. This requires a comprehensive scientific understanding of the entire Earth system, in particular how its component parts and their interactions have evolved, how they function, and how they may be expected to further evolve on all time scales. NASA's Earth Science program advances knowledge of the integrated Earth systems and strives to advance goals in six Science Focus Areas and their component disciplinary programs. The six focus areas and their main aims as articulated in the *2010 Science Plan* are as follows: • **Atmospheric Composition:** understanding and improving predictive capability for changes in the ozone layer, climate forcing, and air quality associated with changes in atmospheric composition; • **Weather:** enabling improved predictive capability for weather and extreme weather events; • **Carbon Cycle and Ecosystems:** quantifying, understanding and predicting changes in Earth's ecosystems and biogeochemical cycles, including the global carbon cycle, land cover, and biodiversity; • **Water and Energy Cycle:** quantifying the key reservoirs and fluxes in the global water cycle and assessing water cycle change and water quality; • **Climate Variability and Change:** understanding the roles of ocean, atmosphere, land, and ice in the climate system and		1. Advance the understanding of changes in the Earth's radiation balance, air quality, and the ozone layer that result from changes in atmospheric composition (Atmospheric Composition) 2. Improve the capability to predict weather and extreme weather events (Weather) 3. Detect and predict changes in Earth's ecological and chemical cycles, including land cover, biodiversity, and the global carbon cycle (Carbon Cycle and Ecosystems) 4. Enable better assessment and management of water quality and quantity to accurately predict how the global water cycle evolves in response to climate change (*Water and Energy Cycle*) 5. Improve the ability to predict climate changes by better understanding the roles and interactions of the ocean, atmosphere, land and ice in the climate system (*Climate Variability and Change*) 6. Characterize the dynamics of Earth's surface and interior, improving the capability to assess and respond to natural hazards and extreme events (*Earth Surface and Interio*r) 7. Further the use of Earth system science research to inform decisions and provide benefits to society Two foundational documents guide the overall approach to the Earth science program: the NRC's 2007 Earth science decadal survey and NASA's 2010 climate-centric architecture plan. The NRC decadal survey articulates the following vision for Earth science research and applications in support of society: Understanding the complex, changing planet on which we live, how it supports life and how human activities affect its ability to do so in the future is one of the greatest intellectual challenges facing humanity. It is also one of the most important challenges for society as it seeks to achieve prosperity, health, and sustainability. The 2007 decadal survey recommended a broad portfolio of missions to support the research that is needed to provide answers to

	improving predictive capability for future evolution; and • **Earth Surface and Interior:** characterizing the dynamics of the Earth surface and interior and forming the scientific basis for the assessment and mitigation of natural hazards and response to rare and extreme events. NASA's activities encompass the global atmosphere; the global oceans, including sea ice; land surfaces, including snow and ice; ecosystems; and interactions between the atmosphere, oceans, land, and ecosystems, including humans. A key strategic element is sustained simultaneous observation to unravel the complexity of the global integrated Earth system.		the key science questions and accomplish the related science goals. Recognizing the pressing challenge of climate change, NASA addressed the need to ensure the continuity of key climate monitoring measurements in its 2010 climate-centric architecture plan. The plan reflects the need to collect additional key climate monitoring measurements, which are critical to informing policy and action, and which other agencies and international partners had not planned to continue. The plan also accelerated key decadal survey recommendations to address the nation's climate priorities. NASA's ability to view the Earth from a global perspective enables it to provide a broad, integrated set of uniformly high-quality data covering all parts of the planet. NASA shares this unique knowledge with the global community including members of the science, government, industry, education, and policy-maker communities. For example, NASA plays a leadership role in a range of federal interagency activities, such as the U.S. Global Change Research Program (USGCRP), by providing global observations, research results, and modeling capabilities. It also maintains an expansive network of partnerships with foreign space agencies and international research organizations to conduct activities ranging from data sharing agreements to joint development of satellite missions. These interagency activities and international partnerships substantially leverage NASA's investments and provide knowledge essential for understanding the causes and consequences of climate change and other global environmental concerns. Further information on the goals and objectives of NASA's Earth Science program may be found in the *2014 Science Mission Directorate Science Plan* available through the EVI-3 Library.
p. M-9	Requirement M-2 Each proposal shall clearly define its science question or questions, shall demonstrate how the science questions map into high-level science requirements, and shall show how the science requirements subsequently map into the measurement and instrument performance requirements.	p. P-9	Requirement P-2 Each proposal shall clearly define its science question or questions, shall demonstrate how the science questions map into high-level science requirements, and shall show how the science requirements subsequently map into the measurement and instrument performance requirements and for CubeSat Investigations into the CubeSat(s) performance requirements.

p. M-9	Requirement M-3 proposal shall clearly state the baseline and threshold requirements for the performance of the instrument, the prime mission lifetime for operation of the instrument, and range of satellite orbits acceptable or required for deployment of the instrument.	p. P-9	Requirement P-3 Each proposal shall clearly state the baseline and threshold requirements for the performance of the instrument and/or CubeSat(s), the prime mission lifetime for operations, and range of satellite orbits acceptable or required for deployment.
p. M-10	For Class D instrument based investigations or for CubeSat based investigations, the cost cap is $30M in (FY) 2016 dollars. For Class C instrument based investigations, the cost cap is $94M in (FY) 2016 dollars.	p. P-10	For Class D instrument based investigations or for CubeSat based investigations, the cost cap is $31M in (FY) 2018 dollars. For Class C instrument based investigations, the cost cap is $97M in (FY) 2018 dollars.
p. M-10	NASA expects to select at least one Class C EVI instrument based investigation, or up to three Class D investigations, or some combination of Class C and Class D investigations that combined are less than $94M, assuming all such investigations are deemed selectable.	p. P-10	NASA expects to select some combination of Class C and Class D investigations based on funding availability at the time of selection, assuming all such investigations are deemed selectable.
p. M-10	Requirement M-8 The proposed PI-Managed Mission Cost shall be no more than $94M in FY 2016 dollars for a Class C instrument based investigation. The PI-managed cost shall be no more than $30M in FY 2016 dollars for any Class D instrument or any CubeSat based investigation.	p. P-11	Requirement P-8 The proposed PI-Managed Mission Cost shall be no more than $97M in FY 2018 dollars for a Class C instrument based investigation. The PI-managed cost shall be no more than $31M in FY 2018 dollars for any Class D instrument or any CubeSat based investigation.
p. M-13	For CubeSat Investigations, all costs are inside the PI-Managed Mission Cost except the cost associated with integration and launch of the CubeSats on the NASA selected launch vehicle(s), as identified in Table 2.	p. P-13	For CubeSat Investigations, all costs are inside the PI-Managed Mission Cost except the cost associated with integration and launch of the CubeSats on the NASA selected launch vehicle(s), as identified in Table 2. The PI-Managed Mission Cost also includes the cost of the science team and key management and engineering teams during the integration and test of the CubeSat(s) to selected launch vehicle part of Phase D, as this is not expected to be dependent on the launch services provided to the selected investigation. For support of the science team and key management and engineering teams during this part of Phase D, a one-year duration should be assumed for budgeting purposes.

p. M-14 Table-2	Key management and engineering staff during Phase D (Project manager, instrument manager, systems engineer, etc.)	p. P-14 Table 2	Key management and engineering staff during integration and test of the CubeSat(s) to selected launch vehicle part of Phase D (Project manager, instrument manager, systems engineer, etc.) assuming a 1 year duration
	This text supersedes Section 5.5.5 of the SALMON-2 AO.	p. P-15-P-16	***4.4.2 Full Cost Accounting for NASA Facilities and Personnel*** For the purpose of calculating the full cost of NASA-provided services, proposal budgets from NASA Centers, whether as the proposing organization or as a supporting organization, are to include within the PI-Managed Mission Cost all costs normally funded by an SMD Project under NASA's full cost accounting practices, including civil servant labor (salaries and benefits), civil service travel, and procurements. All of these costs must be clearly identified by year within the budget justification section of the proposal. Estimated NASA Center Management and Operations (CM&O) overhead costs must also be included within the cost cap, to enable a level playing field for all proposers. Per HQ policy guidance signed in June 2010 by the Associate Administrator, Mission Support Directorate and by the Agency Chief Financial Officer, all Centers shall use an identical CM&O burden rate of $47K (FY18) per "equivalent head." Per Agency policy, this rate must be applied as a "cost per equivalent head" to all Civil Service FTEs plus on/near site contractor WYEs associated with the proposal. The estimated FTEs and WYEs per fiscal year, and the resulting CM&O burden, must be identified in a separate table within the budget justification section of the proposal. The CM&O burden costs must be clearly denoted in all budget tables. These costs may not be included or rolled into any other budget lines in such a way that they become unidentifiable. Do not include within the cost proposal, or within the PI-Managed Mission Cost, any estimate for Agency Management and Operations (AM&O, a.k.a. NASA Headquarters overhead).

Table 1: Cost Elements for NASA Center Budget Proposals in response to SMD AOs

	Identify in proposal?	Include in PI-Managed Mission Cost?	Funding source	Comments
Civil Service Labor	Yes	Yes	SMD Program	Includes salaries and benefits
Civil Service Travel	Yes	Yes	SMD Program	
Other Direct/Procurements	Yes	Yes	SMD Program	Includes procurements as typically identified by flight projects in the NASA N2 budget database
CM&O	Yes	Yes	CASP	Applied to NASA provided labor, including Center civil servants and on-site contractors
AM&O	No	No	CASP	
NASA Contributed Costs	Yes	No	Identify	Must be non-SMD
Non-NASA Federal Government (funding requested from NASA)	Yes	Yes	SMD Program	If NASA funding is requested for the non-NASA Federal Government agency
Contributions	Yes	No	Identify	Includes all non-NASA contributions

Requirements P-14. Proposals including costs for NASA Centers shall conform to the full cost policy stated in this Section. Each of

			the elements of the NASA Center costs (direct labor, travel, and procurements) shall be separately identified by year. If any NASA funded item(s) or services are to be considered as contributed costs, then the contributed item(s) must be separately funded by a non-SMD effort complementary to the proposed investigation, the value of the contribution(s) must be estimated, and the funding source(s) must be identified. Requirements P-15. If any NASA funded item(s) or services are considered as contributed costs, then the proposal shall estimate the value of the contribution(s) and shall identify the funding source(s). Any non-NASA Federal Government costs must follow the appropriate agency accounting standards for full cost. If no standards are in effect, the proposers must follow the *Managerial Cost Accounting Concepts and Standards for the Federal Government*, as recommended by the Federal Accounting Standards Advisory Board and available in the EVI-3 Library. Requirements P-16. Proposals including costs for non-NASA Federal Government agencies shall follow the applicable accounting standards.
p. M-15	Each selected Class C instrument investigation under this EVI solicitation will be expected to deliver an instrument that can be integrated onto a NASA-determined platform by March 31, 2019. Nominally, the selected investigation(s) will span the years of FY 2014-FY 2019. Nominally, the selected investigation(s) will span the years of FY 2014-FY 2019. This is expected to cover development Phases A through C. Proposals that include a more rapid instrument development timelines may be selected, provided the required budget phasing can be accommodated by NASA. Each selected Class D instrument or CubeSat investigation under this EVI solicitation will be	p. P-17	Each selected Class C instrument investigation under this EVI solicitation will be expected to deliver an instrument that can be integrated onto a NASA-determined platform by March 31, 2021. Nominally, the selected investigation(s) development Phases A through C will span the years of FY 2016-FY 2021. Proposals that include a more rapid instrument development timelines may be selected, provided the required budget phasing can be accommodated by NASA. Each selected Class D instrument or CubeSat investigation under this EVI solicitation will be expected to deliver an instrument that can be integrated onto a NASA-determined platform and/or a CubeSat(s) that can be integrated to a NASA-determined launch vehicle by March 31, 2020. Nominally, the selected investigation(s) development Phases A through C (or into Phase D for CubeSats)

	expected to deliver an instrument that can be integrated onto a NASA-determined platform and/or a CubeSat(s) that can be integrated to a NASA-determined launch vehicle by March 31, 2018. Nominally, the selected investigation(s) will span the years of FY 2014-FY 2018. This is expected to cover development Phases A through C (or into Phase D for CubeSats). Proposals that include more rapid development timelines may be selected, provided the required budget phasing can be accommodated by NASA. It is expected that once an appropriate platform and/or launch service is determined by NASA, preferably before the Preliminary Design Review, minor changes to the selected instrument and/or CubeSat(s) will be required. Appropriate schedule margin should be planned to account for such changes. Requirement M-14. For Class C instrument investigations, proposals shall include a development schedule that delivers an instrument for integration onto the selected platform no later than March 31, 2019. For Class D instrument or CubeSat investigations, proposals shall include a development schedule that delivers an instrument for integration onto the selected platform and/or a CubeSat(s) that can be integrated to a launch vehicle no later than March 31, 2018.		will span the years of FY 2016-FY 2020. Proposals that include more rapid development timelines may be selected, provided the required budget phasing can be accommodated by NASA. It is expected that once an appropriate platform and/or launch service is determined by NASA, preferably before the Preliminary Design Review, minor changes to the selected instrument and/or CubeSat(s) will be required. Appropriate schedule margin should be planned to account for such changes. Requirement P-17. For Class C instrument investigations, proposals shall include a development schedule that delivers an instrument for integration onto the selected platform no later than March 31, 2021. For Class D instrument or CubeSat investigations, proposals shall include a development schedule that delivers an instrument for integration onto the selected platform and/or a CubeSat(s) that can be integrated to a launch vehicle no later than March 31, 2020.
	This text supersedes Section 5.3.4 of the SALMON-2 AO.	p. P-17-P-18	***4.5.1 New Technologies/Advanced Engineering Developments*** This EVI-3 PEA solicits flight missions, not technology or advanced engineering development projects. Proposed investigations are generally expected to have mature technologies, with systems at a Technology Readiness Level (TRL) of 6 or higher. For the purpose of TRL assessment, systems are defined as level 3 WBS payload developments (i.e., individual instruments) and level 3 WBS spacecraft elements (e.g., electrical power

			system); see Figure 3-7 of the *NASA WBS Handbook*, NASA/SP-2010-3404, which can be found in the EVI-3 Library. TRLs are defined in NPR 7123.1B *NASA Systems Engineering Processes and Requirements*, Appendix E, which can be found in the EVI-3 Library. Proposals with a limited number of less mature technologies and/or advanced engineering developments are permitted as long as they contain a plan for maturing systems to TRL 6 (see NASA/SP-2007-6105 Rev 1, *NASA Systems Engineering Handbook*) by no later than PDR and adequate backup plans that will provide mitigation in the event that the systems cannot be matured as planned. The proposers should assume that the TRL state of systems will be validated by an independent team at PDR. Requirements P-18. Proposals that use systems currently at less than TRL 6 shall include a plan for system maturation to TRL 6 by no later than PDR and a backup plan in the event that the proposed systems cannot be matured as planned (see Section 5.1 of this PEA, for additional detail).
p. M-16	Even though NASA has current plans to support ISS operations through 2020, any instrument that is appropriate for the ISS should describe an adequate timeline of development and operation for the proposed investigation, regardless of whether it is completed by the end of 2020. Differences between the investigation's timeline and NASA's plans for future ISS operations will be factored into the proposal's risk assessment for selection.	p. P-19	Even though NASA has current plans to support ISS operations through 2024, any instrument investigation that is only appropriate for the ISS should describe an adequate timeline of development and operation for the proposed investigation, regardless of whether it is completed by the end of 2024. Differences between the investigation's timeline and NASA's plans for future ISS operations will be factored into the proposal's risk assessment for selection.

p. M-17	***4.5.3 CubeSat Investigations*** For CubeSat proposals, all instruments/small satellites are recommended to comply with Cal Poly CubeSat Developer's specifications, found at http://cubesat.calpoly.edu/index.php/documents/developers. Concepts that do not comply with the Cal Poly CubeSat and Poly Picosat Orbital Deployer (P-POD) standards should clearly describe how their designs are packaged and deployed. NASA Launch Services Program (LSP) has a Program Level Poly-Picosatellite Orbital Deployer (PPOD) and CubeSat Requirements Document (http://www.nasa.gov/pdf/627972main_LSP-REQ-317_01A.pdf) with requirements for CubeSats sized up to 3U. All proposals for CubeSats sized up to 3U shall be compliant with these requirements. Both of these documents can also be found in the EVI-2 Library listed in Section 7 of this PEA. Investigations may propose to utilize a 6U configuration (2U x 3U). The LSP Users Guide referenced above does not address the specific configuration requirements for a 6U form factor CubeSat at this time. Upon selection investigations requiring a 6U CubeSat must work closely with the CubeSat Launch Initiative (CSLI) program to define the interface requirements so that the satellite will be compatible with the 6U standard that KSC/LSP adopts. No CubeSat form factors larger than 6U will be considered under the present call. Qualifying CubeSat form factors (size) include 1U, 1.5U, 2U, 3U and 6U with a mass not to exceed 1.33 kg per U. Requirements M-16. All proposals involving sizes 1U through 3U CubeSats shall be compliant with the requirements in the NASA Launch Services Program Level Poly-Picosatellite Orbital Deployer (PPOD) and CubeSat Requirements	p. P-19	***4.5.3 CubeSat Investigations*** CubeSat proposals are recommended to comply with Cal Poly CubeSat Developer's specifications, found at http://cubesat.calpoly.edu/index.php/documents/developers. Concepts that do not comply with the Cal Poly CubeSat and Poly Picosat Orbital Deployer (P-POD) standards should clearly describe how their designs are packaged and deployed. NASA Launch Services Program has issued a *Program Level Dispenser and CubeSat Requirements Document* with requirements for CubeSats sized up to 6U (2U x 3U). All proposals for CubeSats sized up to 6U shall be compliant with these requirements. Both of these documents can also be found in the EVI-3 Library. No CubeSat form factors larger than 6U will be considered under the present call. Qualifying CubeSat form factors (size) include 1U, 1.5U, 2U, 3U and 6U with a mass not to exceed 1.33 kg per U. Requirements P-20. All proposals involving sizes 1U through 6U CubeSats shall be compliant with the requirements in the NASA Launch Services Program *Program Level Dispenser and CubeSat Requirements Document*. No CubeSat form factors larger than 6U will be considered under the present call. Qualifying CubeSat form factors (size) include 1U, 1.5U, 2U, 3U and 6U with a mass not to exceed 1.33 kg per U.

	Document. Investigations may propose to utilize a 6U configuration (2U x 3U). The LSP Users Guide referenced above does not address the specific configuration requirements for a 6U form factor CubeSat at this time. Upon selection investigations requiring a 6U CubeSat must work closely with the CSLI program to define the interface requirements so that the satellite will be compatible with the 6U standard that KSC/LSP adopts. No CubeSat form factors larger than 6U will be considered under the present call. Qualifying CubeSat form factors (size) include 1U, 1.5U, 2U, 3U and 6U with a mass not to exceed 1.33 kg per U.		
p. M-17	This opportunity solicits proposals for science investigations requiring the development and operation of space-based instruments in one of two designations; Class C (medium priority, medium risk, less than two years primary mission timeline as defined in NPR 8705.4, *Risk Classification for NASA Payloads*) on a platform to be identified by NASA at a later date; or Class D (low priority, high risk, less than two years primary mission timeline as defined in NPR 8705.4, *Risk Classification for NASA Payloads*). CubeSats are designated as Class D. Section 4.4.1 describes the cost caps for Class C vs. Class D instruments.		This opportunity solicits proposals for science investigations requiring the development and operation of space-based instrument(s) of either Class C or Class D risk classification (as defined in NPR 8705.4, *Risk Classification for NASA Payloads*; found in the EVI-3 Library). CubeSats are designated as Class D. Section 4.4.1 describes the Cost Caps for Class C vs. Class D investigations.
p. M-18	The PI will be responsible for analysis of the mission data necessary to achieve the proposed science objectives, for publicly distributing all data collected by the instrument (s) and produced by the investigation prime measurement phase, for archiving the data in the NASA selected DAAC for public use, and for timely publication of initial scientific data in refereed scientific journals, as part of their mission operations (Phase E) or postmission activities. Science studies with the archived data sets beyond the science investigations proposed by PI - led team will be solicited and selected by NASA in	p. P- 20	The PI will be responsible for production and analysis of the mission data necessary to achieve the proposed science objectives, delivery of products to NASA selected Distributed Active Archive Centers (DAAC), and for timely publication of initial scientific results in refereed scientific journals, as part of their mission operations (Phase E) or post-mission activities. The assigned NASA DAAC(s) will be responsible for archival and public distribution of all data collected by the instrument(s) and produced by the investigations prime measurement phase. The PI is required to work with the DAAC to ensure that the mission data is delivered in a format that meets NASA requirements. The NASA DAAC will not levy any additional cost for its services to the PI, therefore this cost

	subsequent NASA solicitations through the Research Opportunities in Space and Earth Sciences (ROSES) NASA Research Announcement.		is not to be included as part of the PI-Managed Mission Cost. Science studies with the archived data sets beyond the science investigations proposed by PI-led team will be solicited and selected by NASA in subsequent NASA solicitations through the Research Opportunities in Space and Earth Sciences (ROSES) NASA Research Announcement.
p. M-18	Requirement M-20. Proposals shall clearly identify the standard products from the investigation and describe the complete data processing flow leading to archived data products, including the time required to complete the initial and final on-orbit calibration and validation of the measurements.	p. P-20	Requirement P-24. Proposals shall clearly identify the standard products from the investigation and describe the complete data processing flow leading to archived data products, including the time required to complete the initial and final on-orbit calibration and validation of the measurements. Proposal shall show adequate resources for delivering data products to the assigned NASA DAAC.
p. M-19	During Phase A, NASA will assign a data center, e.g., one of the Earth Observing System Data and Information System (EOSDIS) Distributed Active Archive Centers (DAACs), to be the data archive for the selected mission; proposals should not be tailored to one specific data center. Information on EOSDIS and the DAACs is available at http://esdis.eosdis.nasa.gov/eosdis/overview.html and http://esdis.eosdis.nasa.gov/dataaccess/datacenters.html .	p. P-21	During Phase A, NASA will assign a data center, e.g., one of the Earth Observing System Data and Information System (EOSDIS) Distributed Active Archive Centers (DAACs), to be the data archive for the selected mission; proposals should not be tailored to one specific data center. Information on EOSDIS and the DAACs is available at https://earthdata.nasa.gov/about-eosdis/science-system-description/eosdis-components https://earthdata.nasa.gov/about-eosdis/science-system-description/eosdis-components/eosdis-data-centers and https://earthdata.nasa.gov/data/standards-and-references.
p. M-19-M-20	Requirement M-23: A schedule-based end-to-end data management plan, including approaches for data retrieval, validation, preliminary analysis, distribution, and archiving shall be described. The science products (*e.g.*, flight data, ancillary or calibration data, theoretical calculations, higher order analytical or data products, laboratory data, etc.) shall be identified, including a list of the specific data products and the individual team members responsible for the data products. The plan shall identify the formats and standards to be used, selected from the published list of	p. P-22	Requirement P-27: A schedule-based end-to-end data management plan, including approaches for data retrieval, validation, preliminary analysis, metadata generation and delivery to the assigned NASA DAAC for public distribution, and archiving shall be described. The science products (*e.g.*, flight data, ancillary or calibration data, theoretical calculations, higher order analytical or data products, laboratory data, etc.) shall be identified, including a list of the specific data products and the individual team members responsible for the data products. The plan shall identify the formats and standards to be used, selected from the published list of approved

	approved NASA Earth Science Data System Standards (http://earthdata.nasa.gov/our-community/esdswg/standards-process-spg/rfc).		NASA Earth Science Data System Standards (https://earthdata.nasa.gov/data/standards-and-references).
	This text adds to Section 6.2 of the SALMON-2 AO.	p. P-25	The key data associated with the electronic submission of proposals (see Section 6.2 of the SALMON-2 AO) includes questions indicating whether or not a proposal contains export-controlled information (see Sections 5.9.4 and 5.10.2 of the SALMON-2 AO). All proposers must answer these questions YES or NO when completing the electronic submission; these questions shall not be left unanswered. All proposals must identify any export-controlled material in the proposal as instructed in Sections 5.9.4 and 5.10.2 of the SALMON-2 AO. To the extent possible, ITAR sensitive material should be organized into separate clearly marked sections. Requirements P-29. All proposals must identify any export-controlled material in the proposal as instructed in Sections 5.9.4 and 5.10.2 of the SALMON-2 AO.
	This text supersedes Requirement B-27 of the SALMON-2 AO's Appendix B.	p. P-25	Requirement P-33. This section shall describe any proposed new technologies and/or advanced engineering developments and the approaches that will be taken to reduce associated risks. Descriptions shall address, at a minimum, the following topics: • Identification and justification of the TRL for each proposed system (level 3 WBS payload developments and level 3 WBS spacecraft elements) incorporating new technology and/or advanced engineering development at the time the proposal is submitted (for *TRL definitions*, see NPR 7123.1B, *NASA Systems Engineering Processes and Requirements*, Appendix E, in the EVI-3 Library); • Rationale for combining the TRL values of components and subsystems to derive each full system TRL as proposed, appropriately considering TRL states of integration (see NASA/SP-2007-6105 Rev 1, *NASA Systems Engineering Handbook*);

			• Rationale for the stated TRL value of an element that is an adaptation of an existing element of known TRL; • The approach for maturing each of the proposed systems to a minimum of TRL 6 by PDR: – Demonstration (testing) in a relevant environment can be accomplished at the system level or at lower level(s); – If applicable, justify what demonstration(s) in a relevant environment at lower level(s) (subsystem and/or subsystem-to-subsystem) would be sufficient to meet system level TRL 6, considering (i) where any new technology is to be inserted, (ii) the magnitude of engineering development to integrate elements, (iii) any inherent interdependencies between elements (e.g., critical alignments), and/or (iv) the complexity of interfaces – see the EVI-3 Library for examples; – Include discussion of simulations, prototyping, demonstration in a relevant environment, life testing, etc., as appropriate; • An estimate of the resources (manpower, cost, and schedule) required to complete the technology and/or advanced engineering development; and • Approaches to fallbacks/alternatives that exist and are planned, a description of the cost, decision date(s) for fallbacks/alternatives, relevant development schedules, and performance liens they impose on the baseline design, and the decision milestones for their implementation. If no new technologies or advanced engineering development is required, system TRL 6 or above at the time of proposal submission shall be clearly demonstrated.
p. M-24	After the evaluation, but prior to the selection decision, NASA will perform an accommodation study of selectable proposals to assess the extent to which the proposed instrument is compatible with potential satellite platform interfaces and operations	p. P-27	After the evaluation, but prior to the selection decision, NASA will perform an accommodation study of selectable instrument investigation proposals to assess the extent to which the proposed instrument is compatible with potential satellite platform interfaces and operations. This accommodation study will also consider the accommodations of selectable CubeSat proposals for launch.
p. M-24 – M-25	As stated in Section 7.3 of the SALMON-2 AO, the Selection Official may take into account a wide range of programmatic factors in deciding whether or not to	p. P-28	As stated in Section 7.3 of the SALMON-2 AO, the Selection Official may take into account a wide range of programmatic factors in deciding whether or not to select any proposals and in selecting

	select any proposals and in selecting among selectable proposals, including, but not limited to, planning and policy considerations, available funding, programmatic merit and risk of any proposed partnerships, and maintaining a programmatic balance across the mission directorate(s). For an EVI instrument proposal selection, these factors also include the likelihood that the proposed instrument can be accommodated on a NASA-selected platform in the near future.		among selectable proposals, including, but not limited to, planning and policy considerations, available funding and funding profiles, programmatic merit and risk of any proposed partnerships, and maintaining a programmatic balance across the mission directorate(s). For an EVI-3 instrument proposal selection, these factors also include the likelihood that the proposed instrument can be accommodated on a NASA-selected platform in the near future. For an EVI-3 CubeSat proposal selection, these factors also include that the appropriate launch services can be provided.
p. M-25	Proposals are not required to include SOWs and cost and pricing data. These will be required only for investigations that are selected for award. For those investigations that are selected, it will be in the best interest of the PI-led mission management teams to provide updated SOWs, cost and pricing data, and small business subcontracting plans in as timely a manner as possible. The process of awarding contracts cannot begin until final SOWs, cost and pricing data, and small business subcontracting plans have been received, and funds cannot be provided to the implementing organizations until this process has been completed.	p. P-29	Proposals are not required to include SOWs and cost and pricing data. However, these items will be required only for investigations selected for award. The process of awarding contracts cannot begin until final SOWs, cost and pricing data, and small business subcontracting plans have been received, and funds cannot be provided to the implementing organizations until this process has been completed.
p. M-26	7. SUMMARY OF KEY INFORMATION	p. P-29-P30	7. SUMMARY OF KEY INFORMATION ***See note below.*

*Note: The Planned Page References in this table are estimates, and may differ from those of the final EVI-3 PEA.

**Please refer to the *Community Notice* for the available information on Funding, Dates, Websites, and Program Contact. Other details on Submission are expected to be similar to EVI-2.